

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
6 October 2005 (06.10.2005)

PCT

(10) International Publication Number
WO 2005/091820 A2

(51) International Patent Classification: Not classified

(21) International Application Number: PCT/US2005/004821

(22) International Filing Date: 15 February 2005 (15.02.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data: 60/550,653 5 March 2004 (05.03.2004) US

(71) Applicant (for all designated States except US): ALUMINA MICRO LLC [US/US]; 1971 Midway Lane, Suite J, Bellingham, WA 98226 (US).

(72) Inventor; and

(75) Inventor/Applicant (for US only): DAVIES, Brady, Reuben [US/US]; 1281 Sandstone Way, Bellingham, WA 98226 (US).

(74) Agent: SHAH, Shital, A.; MacMillan Sobanski & Todd LLC, One Maritime Plaza, 4th Floor, 720 Water Street, Toledo, OH 43604 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

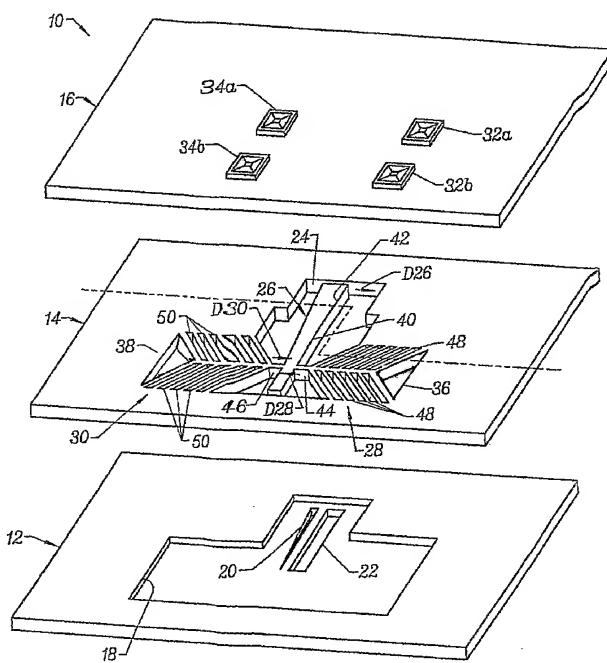
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: SELECTIVE BONDING FOR FORMING A MICROVALVE



(57) Abstract: A method for forming a micromachined device is disclosed that includes providing a first silicon layer and a second silicon layer. A portion of the second silicon layer is etched to form a slider portion and a layer portion. The slider portion is movable relative to the layer portion. A portion of the first silicon layer is coated with a coating material that has a size and shape that corresponds to the size and shape of the slider portion. The first silicon layer is then positioned over the second silicon layer such that the coated portion of the first silicon layer substantially aligned with the slider portion of the second silicon layer. A bonding operation is performed to bond the first silicon layer to the second silicon layer. The coating material separates the slider portion from the first silicon layer during the bonding operation to prevent the slider portion from bonding with the first layer. This method can also be implemented by selectively coating portions of the first silicon layer with a coating that will enhance or cause bonding only in areas adjacent to the coating material. A hybrid process whereby one material is placed in portions of the first silicon layer to prevent bonding and a second material is placed in other portions of the first silicon layer to enhance or cause bonding is also possible.

WO 2005/091820 A2